Final Project MBAD6112

There are two components to the final project, a group component and an individual component. I will first describe the group component and then describe the individual component.

Group Component

For the group component you should work in groups of either 2 or 3 members (you choose your own groups). Your supervisor has provided you with the following data series: expenditures on new automobiles, gross domestic product (GDP), wages and salaries, West Texas spot oil prices, and new automobile finance rates. A more thorough description of the data series is found in the Final Project Data Description file. Your supervisor has asked you to estimate the impact of those variables on quarterly expenditures on new automobiles in the US.

Specifically for the final project, I want you to see the following estimations:

1) Using linear regression, estimate the impact of GDP, wages and salaries, and West Texas spot oil prices on new automobile expenditures for the period 1947:Q1-2007:Q4. Present the regression results in a table. Discuss the impact of the regression results, including, but not limited to, the interpretation of the sign and magnitude of the individual coefficient estimates, whether the signs of the individual coefficients are consistent with what one might have hypothesized those signs to be, and the overall explanatory power of the model.

2) Using linear regression, estimate the impact of GDP, wages and salaries, West Texas spot oil prices, and new automobile finance rates on new automobile expenditures for the period 1971:Q4-2007:Q4. Note that this period is shorter than the period in (1) because the data for new automobile finance rates begins in 1971. As in (1), present the regression results in a table. Discuss the impact of the regression results, including, but not limited to, the interpretation of the sign and magnitude of the individual coefficient estimates, whether the signs of the individual coefficients are consistent with what one might have hypothesized those signs to be, and the overall explanatory power of the model.

3) Suppose that you perfectly predicted GDP, oil prices, wages and salaries, and new automobile finance rates for the period 2008:Q1-2010:Q4. Using your estimates for (1) and (2), what would the predicted expenditures on new automobile sales be for each of the 12 quarters between 2008:Q1-2010:Q4? Which model provides a better prediction, and why do you think the model predicts better? Explain how this exercise shows the limitations of regression analysis.

4) Models (1) and (2) are based on data I could easily find. I have made no transformations to any of the data series, and there are likely to be other variables that would be important in estimating new automobile expenditures. If you were asked to estimate new automobile expenditures for the US, are there other modeling choices you would make and other data you would like to have? Explain.

5) Bonus: For extra points, the group can estimate some suggested models in (4) and compare the results of these new models with the models in (1) and (2).

Individual component

The individual component of the final project now places each group member in a different role. If the group consists of two members, have one member act as a _**firm**_ level analyst attempting to predict the quarterly sales of the firm's new automobiles, and have the other member act as a _**product category**_ level analyst attempting to predict the quarterly sales of one of the firm's product categories. For instance, suppose that the firm is Ford Motor Company, so that the firm analyst is attempting to predict new automobile sales for Ford, while the product category analyst would be attempting to predict sales for a subset of the new automobile sales (it might be "Cars" or "Crossovers & SUVs" or "Trucks & Vans", etc. – those categories are taken directly from Ford's website).   If there are three group members, then the third group member would be a _**single product**_ analyst and would be attempting to predict sales for a single product (it might be the Ford Mustang, or the Ford F-150, or the Ford Explorer, or whatever individual automobile type the group member chooses). You can decide among the group who will take each role. I use Ford as an example – it does not have to be a Ford product.

To be very clear, you will NOT have any data, so there will be no actual estimation for this part of the project. It is incredibly difficult to obtain the data really needed to do the analysis correctly at the firm level, let alone the single product level. What each of you are to do, for your respective roles, is to write a report to your "supervisor" informing him or her of what data you will need to properly conduct the analysis. This report should include a description of the data that you would need, why you need that data (use economic theory to explain why the data would be meaningful), and what effects you would expect these data to have on expenditures for your particular analysis (again use economic theory to explain these hypothesized effects). Keep in mind that the different levels of analysis will require different data.

Format and length for the group and individual components

The format for both components should be formal – complete sentences, paragraphs, proper punctuation, etc. While I do not have a specific page length in mind for the group project, this part of the project is more "classroom oriented" so that I know that at least at the group level everyone understands the concepts we covered in regression analysis so please make the report thorough (I am not expecting a 20 page report – I would be surprised if you had more than 5-6 pages, excluding tables).

For the individual component I want you to consider how long such a "report" would be if you were actually writing this request to your supervisor. Usually such reports should be concise so as to save everyone time. I am expecting that the individual component is shorter, perhaps 3 pages at most. Again, you should write in complete sentences, but the goal is to make you think about what you are writing – keep the important information in the report, remove any extraneous or superfluous text.